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ABSTRACT

A comparative study of parent-child interaction and its relation to children's intellectual achievement is presented in examining the question of cultural continuities in cognitive development. Problem-solving behavior of fifth graders with their mothers from urban settings in Peru and the United States (N=64) was videotaped. In contrast to studies where literacy is treated as a context variable, in this study literacy is controlled, defining parent-child interactions centered around a concept formation task. "Cultural continuity" between two western cultures is studied; critical problems in research linking family socialization to individual development are identified. Conceptual issues in cross-cultural research are addressed. The cross-national design also serves to illustrate some of the problems encountered when such relationships are studied across social contexts in general. The results suggest that while interaction characteristics are related to children's intellectual achievement, that relation is moderated by context factors that may operate differently in each culture. The findings are discussed in terms of how literacy mediates parents' teaching styles in ways that are culture sensitive. Research issues and recommendations for future research in this area are addressed. (Contains 3 tables and 69 references.) (EMK)

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# Cognitive Socialization Practices Across Ethnocultural Contexts:

# How Much Does Literacy Account for Cultural Differences in Intellectual Performance?

by

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Abstract

A comparative study of parent-child interaction and its relation to children's intellectual achievement is presented in examining the question of cultural continuities in cognitive development. The cross-national design also serves to illustrate some of the problems encountered when such relationships are studied across social contexts in general. The results suggest that while interaction characteristics are related to children's intellectual achievement, that relation is moderated by context factors that may operate differently in each culture. The findings are discussed in terms of how literacy mediates parents' teaching styles in ways that are culture sensitive. Research issues and recommendations in future research in this area are addressed.

## Introduction

Research on adult-child teaching interactions has been of increased theoretical interest in cognitive-developmental research ever since the pioneer work by Baldwin (1945), Hess & Shipman (1965) and others who developed this research genre. Interaction differences are often associated with differences in cultural factors such as socio-economic status, ethnicity in relation to children's developmental level (e g. Hess & Shipman, 1965; Laosa, 1981; Portes, Dunham & Williams, 1985; Sigel, 1988),. A central concern in these studies has been the role of cognitive socialization practices and their relevance in understanding differences in areas of academic and social competence. A relevant question is the area is the extent to which particular forms of parent-child behavior are associated with intellectual development. Another is the extent to which these forms are situated or dependent on the task employed, the cultural context or both. In general, differences in parent-child interaction are related to intellectual task performance in studies of the above genre. Unfortunately, cultural differences in either performance or interaction are generally confounded by SES and factors related to literacy. Yet, this research area is of strategic value in uncovering aspects of culture that are often related to individual cognition, school learning, as well as group differences in related outcomes.

The present study addresses some of the problems inherent in studying the relation between individual development and certain aspects of the micro environment when macro contexts are varied. Many cross-cultural studies involving cognition tend to manipulate literacy as a macro, context factor. This study focuses on the role of other social context influences, in which

literacy is controlled, in defining parent-child interactions centered around a concept formation task. The research represents an effort to explore if what may be termed "cultural continuity" in assisting child performance exists by research in two Western, schooled contexts. The study serves to identify critical problems in research linking family socialization to individual development. A number of specific problems endemic to comparative work are illustrated along with some of the strategies employed to pursue the theoretical question of continuity.

Two main lines of research are relevant to this area of adult-child interaction. The first involves cross cultural studies that examine socialization practices in various cultures (e.g., Roopnarine & Carter, 1992; Whiting & Whiting, 1980). The second line contrasts schooled and unschooled children on various conceptual tasks (e.g., Cole, 1988; Cole, Gay and Glick, 1968 Dasen, 1974; Levy-Bruhl, 1966; Saxe, 1991). The literature on cultural differences in children's development is mostly concerned with the cognitive consequences of schooling, a macro cultural factor. While the second line does not bear on the area of parent-child interaction directly, it does link cultural practices to cognition and development.

Cross cultural research has been methodologically problematic. As Cole (1996) notes, the ambiguous significance of its data has limited the advancement of theory. One of the main problems in studying coarse cultural differences with unschooled subjects is the gap between the psychological reality created by the researchers and the psychological reality of individuals in their every day lives. Although psychological realities may be approximated by studying schooled

subjects in different ethnocultures, so far, little is known about differences in interaction patterns and their relation to individual development.

Research focusing on cultural differences in cognitive socialization, which sometimes bears on closest to the area of parent-child interaction, is also problematic for other reasons. A range of methods, personnel, ages, backgrounds and research goals make systematic comparisons nearly impossible. As a result, socialization practices studied across a number of cultural contexts, and their relation to children's development, tend to vary from one study to another considerably (e.g., Bronstein, 1988; Cole, M., & D'Andrade, R. (1982); Conroy, Hess, Azuma & Kashiwagi, 1980; Russell & Russell, 1992; Roopnarin & Hossain, 1992). Most microgenetic research on parent-child interactions involve infants and toddlers, which anchors generalizations about parent-child interaction patterns to early developmental levels of children. Several studies have examined parental teaching practices with preschoolers since the 1960's, when research on conceptualization styles (Kagan, Moss & Sigel, 1963; Sigel, Anderson and Shapiro, 1966) and parental teaching strategies (Bee et al, 1969; Hess & Shipman, 1965) advanced the field. Since the 1980's, Sigel's research program at ETS has linked parental beliefs and teaching strategies with children's cognitive development in a number of reports, some which are referenced in this writing.

Others have also examined preschoolers interactions with adults and peers with similar goals. For example, Rogoff and Gardner (1989) studied thirty-two mother and six to nine year old child dyads performing memory tasks such as sorting grocery items and other objects and found that successful instruction involved the child in the solution. Wertsch, Minick and Arns (1984)

examined model construction in twelve adult-child dyads and found differences in mother versus teacher regulation. Valsiner (1984) looked at the interactions of mother and young child during mealtime routines. Radziszweska and Rogoff (1988) studied thirty-two dyads (adult or peer with nine year old children) and found that adult as compared to peer guidance was more effective when planning errands. Gauvin and Rogoff (1989) constituted dyads with trained peers, untrained peers, and parents, finding the latter more effective in planning activities. Henderson (1991) also examined adult and three to six year old child interactions during exploration activities and found agreement on common purposes.

Only a few teaching experiments exist with school age children that permit the link between interaction style and cognitive performance to be examined. One advantage of working with school age children is that the association between observed interaction characteristics and school performance on various content areas can be examined. Some microgenetic studies of parent child interaction have contributed toward the development of models such as mediated learning (Tzuriel, 1996), the distancing model (Sigel & McGillicuddy-DeLisi, 1984; Sigel, Stinson & Flaugher, 1991), the carrier wave model (Dunham et al, 1995), and reciprocal teaching (Palincsar & Brown, 1984). In general, these research studies support a modest relationship between certain parent-child interaction characteristics and children's intellectual performance. We do not know, however, whether ethnocultural differences exist in (literate) parents' teaching or interaction styles nor the relation of the latter to children's performance.

Constructs such as scaffolding (Wood, Bruner and Ross, 1976), distancing (Sigel et al, 1991), or in assisted performance (Tharp & Gallimore, 1988) share much conceptually in adult-child interaction studies. This line of research is important because it serves to unpackage some of the aggregated factors inherent in SES, and culture. Some studies employ the emerging Cultural-Historical model (Cole, 1996; Portes, 1996; Van der Veer and Valsiner, 1994; Wertsch, 1991) which is partly discussed later. Some studies have examined interaction characteristics of assistance or scaffolding through analyses of teaching interactions with children of varying ages (e.g., Brown & Ferrara, 1985; ; Diaz, Neal & Amaya-Williams, 1991; Henderson, 1991 Rogoff, Malkin & Gilbride, 1984; Portes, 1988; Rogoff & Wertsch, 1984; Valsiner, 1985; Wertsch Minick & Arns, 1989). Cultural context variations have not been examined directly with respect to parent-child interaction style that control for social class differences. The metacognitive guidance provided by parents, as more capable peers, has generally been the main focus of this literature, along with various aspects of the theory (e.g., the ZPD, appropriation, the 1st Law of cultural development).

Conceptual Issues

The gist of the literature suggests a general, "metacognitive assistance" or distancing factor in parent-child interaction studies. It is associated, and perhaps explains, differences in children's intellectual development and task performance. Whether this metacognitive regulation factor is consistent across (schooled) cultural contexts or tasks remains an open question. There is

some evidence that suggests that the scaffolding or distancing afforded by parents is associated with success across various tasks and school performance (Sigel, 1982; Portes 1991; 1996; Zady, 1996). These studies show that certain interaction or teaching patterns account generally for roughly 10% of children's cognitive performance concurrently. Observed interaction patterns may reflect a certain element of continuity with respect to parental teaching strategies or style that te ds to covary with SES over time. Although interaction content may vary as a function of the child's increasing representational competence from learning and maturation, some evidence of continuity in parental teaching behaviors exists (Sigel, Stinson and Kim, 1993; Dunham, Kidwell & Portes, 1988).

Whether parental teaching styles are classifiable into general patterns, as has been the case with childrearing patterns (Baumrind, 1971) seems unclear. Yet, from an ecological perspective, it would seem that certain scripts pertaining to metacognitive assistance might reflect a prevailing characteristic of the child's activity setting (Gallimore, Goldenberg & Weisner). Some parents may develop enduring beliefs that guide their own guiding strategies with their children. It seems plausible, also, that some aspects or levels of culture may influence the form and content of these scripts or styles of assisting young learners, such as SES, ethnicity, nationality, family status and related variables. With intact families, more than one pattern of assistance or distancing may be involved in the family setting of some cultures, as Sigel et al (1993) found when fathers' strategies where contrasted with those of mothers. In other cultures, the prevailing belief may be that parents need not concern themselves in providing metacognitive assistance, that it is up to siblings

and peers to do so, as Tharp & Gallimore (1988) found with low SES native Hawaiians. What we do not know is whether parent-child interaction patterns relate to achievement similarly across contexts.

The present cross national study regards cognitive assistance or distancing strategies as comprising mediational tools in development. If school achievement differences are related to group differences in cognitive socialization, characteristics of the latter may be examined in terms of mediated action. We may ask "what sorts of means" are present in interactions between children and adults that mediate learning and development. At the group level, we may ask how are psycho-cultural variables organized in different activity settings in relation to the latter question. How may some patterns of assistance be discerned that might be deemed important in facilitating the intellectual development of the individual? And finally, to what extent are cognitive socialization practices related to culture relative to their developmental level?

By examining the cognitive socialization processes that are associated with intellectual competence across settings, some theoretically important questions can begin to be formulated. For example, Vygotsky (1978) and Luria were among the first to examine the cognitive consequences of different cultural-historical contexts on cognition, a tradition subsequently followed by Scribner and Cole (1981) and others. However, the extent to which cultural differences exist *beyond those associated with* differences in literacy, remains a largely unaddressed question. This is a main question for the present study. The subjects in two different

cultural contexts are schooled, and from similar SES backgrounds, so the extent to which the task is similar to both groups would seem greater than in the above comparisons. If the task is comparable across both literate groups, are parent-child interaction patterns also comparable? If so, this would suggest the presence of a general metacognitive assistance that emerges as a function of the task demands? One way to determine if this assumption is true is to see if such patterns have similar relationships with the child's measured cognitive performance in both contexts. It may be that the demands of the task may shape the interaction more so than non-intellective ethnocultural differences. On the other hand, the influence of ethnoculture on the form of interaction may supersede task constraints. Both types of influence may be reflected in the interaction, so the question that may be asked is which is more influential. The problem may be stated in another way. Is literacy the main or most significant ingredient in the finding of cultural differences in this literature? It seems clear that differences in literacy would be the primary factor behind the task not being the same psychologically, and between group differences should emerge. If literacy was equated across groups, we would predict that within group differences in how the task is perceived appears to participants ar greater than between group differences. In the latter case, if significant ethnocultural differences still emerge in interaction, particularly in how metacognitive assistance is deployed, then the argument for cultural context differences that are unrelated to literacy can be made at the expense of a universal interaction/teaching style. The cognitive consequences of such parent-child interaction styles would then remain to be examined

in terms of cognitive performance indices of children's development. These are the main questions for this exploratory study.

Background of the present study

In an earlier study (Portes, 1991), a U.S. sample of 32 mother-child dyads was employed in a factorial study of interaction measures related to intellectual school and task performance. Maternal Verbal Guidance was identified as a general factor which was significantly associated with both, school achievement and social class. In an effort to replicate this first study and examine the role of culture more closely, a Peruvian sample was formed using the same procedures with schooled children, in private and public schools, who were comparable in terms of gender, social class, and school performance distributions. The question of whether a common interaction pattern belied intellectual task performance across contexts was examined. If ethnocultural context differences, on the other hand, mediate the relation between interaction style and children's intellectual performance, this might suggest that the constraints associated with task performance are not "universal" even in comparable schooled samples.

## Method

Subjects and Procedure

A sample of 64 elementary grade school children (fifth grade) and their mothers (32 from Peru and 32 from the U.S.) were selected from a group of volunteers recruited from urban schools in both countries. Letters asking for participation were distributed in two urban schools in the U.S. and two urban schools in Peru. The Peruvian students tended to be slightly younger than the U.S. student sample because many of them were in fifth grade while many in the U.S. had just

completed it at the time of the experiment (Summer). Mothers were asked to provide information on family SES, education, the extent to which they or the father helped children with homework, and the value the family placed on education prior to the Problem solving activity in the first part of the interview.

The samples' selection was designed to balance the volunteers by SES, gender, and achievement level as much as possible within groups, by selecting high achieving volunteers from the lowest SES background and vice-versa. However, achievement and SES remained correlated. The SES and school achievement distributions for the two samples was comparable, as measured by parental education, income, occupation and school performance. High achievers were middle class in both countries, attending parochial schools in Peru and advanced classes in public U.S. schools. The rationale in forming the samples was based on controlling the association between SES and school achievement to the greatest extent possible.

Procedures Parent-child problem solving activity was videotaped in a laboratory setting in which interactions concerning concept-formation tasks were videotaped, transcribed verbatim and coded. The problems presented were the Block Design task (Weschler, 1944) with modified instructions for adult assistance, and eight categorization tasks. A warm-up practice for both tasks was provided. The Block Design task was administered to the child and mother jointly with the instructions that the mother could help at any time. The two categorization tasks that followed the joint Block Design task were four sets of pictures on 3x5 cards (pen, pencil, chalk, eraser: ax, saw, hammer, wood: [drinking] glass, pitcher, bucket, plate: cow, llama (or deer), horse, frog)

and four sets of words (newspaper, magazine, radio, book, etc...) presented in the same sequence without counterbalancing. The initial pilot tests of the translated procedure and tasks led only to a minor change in the stimuli employed for studying concept development. In the picture categorization tasks, a llama replaced a deer stimulus. At the beginning of the categorization tasks, the instructions were given "to group cards according to what they have in common" and then "in what ways are these alike." Subjects were told they could form as many groups as they would like. For the block task, standard instructions and practice were also prompted with the statement "mom can help at any time" at the beginning of the tasks. Mothers were prompted if necessary when the child remained unassisted twice, after which time, experimenter cues were registered in coding. Requests for clarification and assistance from the experimenter, on the part of either member of the dyad were also coded as a different interaction measure. Peruvian students and mothers tended to respond in a manner quite comparable to those in the U.S. sample. That is, most of the concepts and interactions measures such as questions, cues, disagreements were similar in form. The Peruvian data was collected over a year after that from the U.S. sample.

Interaction Measures & Composites

A total of sixteen process measures coded from the observed interactions (see Table 1) were selected for analysis based on their theoretical relevance and association with cognitive performance, along with five task outcome measures. The process measures were open and closed questions by mother, child agreement with mother, demands for additional information or disagreements by either member of the dyad that manifested dissatisfaction with the response

given, interruptions by mother, imperatives, verbal, nonverbal assistance or cues, and also positive reinforcement by her. Also coded were general comments, task relevant comments, questions and interruptions by child, the latter's refusal to accept help from the mother and joint expressions of humor/laughter. Experimenter cues were also included. The measures excluded from analyses were; expressions of high or low confidence, and instances where the solution obtained was due to the mother's behavior because of low reliability. Who initiated each of the eight categorization tasks and 11 block design tasks and instances where the mother solved the problems alone as an outcome were excluded due to low association with cognitive performance.

Several interaction variables were combined into four composites based on their conceptual similarity and function in the tasks. For example, open questions and verbal cues (Quescues) by mother were composited as metacognitive assistance ($r$=.56, $p$< 01). Another composite was comprised of closed questions, imperatives and physical cues that were accompanied with some verbal ones (Closecues). These three measures were highly intercorrelated ($p$ < .01) This composite reflected mothers' directness and restricted way of assisting children's performance. It was often observed during the more challenging tasks involving students. In contrast, reinforcement or agreements by mothers generally followed corrections and dissatisfaction with the child's response by the mother. This composite's measures were also significantly correlated with each other ( 81, $p$ < .01 ). Children's interruptions and questions to mother were also combined for they indicated active participation and were correlated ( .57, $p$ < .01). In sum, these composites allowed data extracted from the interactions

to be more meaningful and economic ( relative to single measures), thus making subsequent analyses more stable and interpretable.

Outcome Measures

The intellectual performance measures included block design total correct, and the number of categorical responses achieved by the child with assistance or not. Relational responses in the picture and word categorization tasks were also coded. The categorical responses were defined as responses that reflected a common, superordinate concept, such as "these three are means of transportation" or "these three {pointing to pencil, pen and crayon} are used for writing"). Relational responses were defined functionally, such as "the ax cuts the wood" or "pencil and eraser, because you write with one and erase with the other". Mothers sometimes ignored the instructions and responded to the categorization tasks directly. Such outcomes were coded as Mother Solves Alone. These responses had a much lower base rate than the other measures. Categorical responses were coded when successful task performance by the child was observed with or without maternal assistance.

The students' level of intellectual development was estimated and categorized on the basis of school performance records. Because grades in Peru are not standardized, the average point value for all courses in the last school year was used as a proxy for the child's intellectual achievement score. Peru uses a 20-point system with 19-20 as A, 17-18 as B, 13-16 as C, 10-12 as D, and 0-10 as F. For the U.S. sample, grades from the previous year were averaged and used along with scores from the California Test of Basic Skills (CTBS). With the above information,

students' school performance was categorized into high, average, and below-average levels.

Coding & Reliability

A time intensive, three-stage procedure was employed to establish the reliability of the process measures in this study. This method was designed to lend confidence to the accuracy of the data employed. One Peruvian judge was trained to transcribe and code transcripts exactly in the same way as in the first study with the thirty-two U.S. dyads.

Stage 1) The trained judge transcribed and coded 32 Peruvian interviews into twenty-two process measures and task outcome variables noted earlier. These categories are described in earlier reports (Portes and Cuentas, 1991; Portes, 1988) where the coding procedure for the U.S. sample, which is the same, was described as well. Each protocol was transcribed verbatim. The mother and child utterances were divided into units and numbered sequentially. Interruptions were noted. Frequency counts were totaled for each measure.

Stage 2) A second trained judge then coded two of the transcribed interviews independently and noted discrepancies with the first coding of the cases. An initial reliability check was performed between the first and second judges for each interaction measure's frequency total per case, averaging .72 for all measures in these two practice cases. Each of these inter-rater disagreements was highlighted in the numbered protocols, discussed by the two judges, and resolved. Six experimental interaction categories were eliminated at this stage because they

could not be operationalized clearly and produced low reliability, leaving sixteen interaction measures. The first judge then reviewed and revised the coding of the remaining 30 cases according to stage 2 discussion. The second judge coded eight cases for the next stage.

Stage 3) Each of the disagreements in the next eight cases was traced back to the transcribed protocol by each judge independently for each case. If the judge recognized a discrepancy based on stage 2 discussion, it was recoded independently. At this point, inter-rater reliability for these eight cases, was checked and found to surpass .89. All interaction measures had reliabilities above .75.

Stage 4) The next eight cases were then coded by the second judge, while the first judge reviewed and revised his coding. Without highlighting and reconsidering discrepant codes and again, utilizing the ratio of agreements (divided by agreements and disagreements), the reliability for each of these eight cases was found to be satisfactory for every interaction measure using frequency totals. For the first sixteen cases then, the overall average of reliability was .95 for all the interaction and task outcome measures combined. At this point, the few discrepancies found were highlited and resolved to permit data entry.

Stage 5) The coding for the remaining cases (14) were reviewed and again revised by the first judge. As a final check, the second judge randomly selected eight of the remaining cases and coded every 20th utterance for mother or child and checked these results against the first judge's frequency total coding for that case. The reliability coefficient for this check was .87. Again, the disagreements identified thus were resolved, and the remainder of the data was entered for analysis.

Demographic Measures & Data Reduction

Data was also collected regarding parental education, occupation, income, and again, dyads were categorized into high, middle, and lower SES groups. Student's gender was also controlled in the subsequent analyses. Factor analysis was employed as a data reduction strategy because it provides a global way to discern the patterning of the interaction measures and to study the structure of these data economically across samples and in relation to the interaction and school performance measures. Another rationale is that the meaningfulness of the results can be better described in this fashion relative to piecemeal analyses for each interaction category.

## RESULTS

### I. Preliminary Analysis (with Peruvian Sample)

In the first part of the study, a replication of the achievement related interaction pattern found in a pilot study with the U. S. sample was attempted with the Peruvians. The replication of the MVG factor (Portes, 1988) found earlier with the U.S. sample was not successful with the Peruvian sample in terms of standard criteria: communality, per cent of the variance accounted, interpretableness nor simplicity of structure. In addition, the resulting factor was not found to be associated with school or task performance as had been the case with the U.S. sample.

### II. Combined Analysis

Since the replication effort above was not successful, two possibilities appeared plausible: a different factor may exist for the Peruvian sample that may be related to intellectual

performance. On the other hand, it may be that while a cultural difference factor exists, there may still be a common factor that is most related to intellectual performance across groups). To examine these questions, a factor analysis was carried out for the U.S. and the Peruvian samples combined, based on the following rationale[1]

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**Since the measures employed were related conceptually to intellectual development and were useful in characterizing the observed behaviors in both samples, their analysis using the combined samples seemed justified. With a common Yardstick," interaction differences by ethnocultural group, gender, and achievement level can be examined. Given that the two samples were comparable in SES, gender, and school achievement distributions, a new factor analysis was completed with the total sample, employing those interaction measures most highly related to intellectual school and task performance.*

*In order to explore the relation between interaction variables and intellectual performance directly, measures selected for factor analyses were controlled for gender and social class . First, partial correlation analyses of school achievement and child categorical task performance, with the above interaction measures were completed. Gender and social class were controlled in each sample through forced entry in a regression analysis before the interaction measures were entered as independent variables. Although gender differences were not found for the interaction measures in prior analyses as a whole, controlling for gender served to reduce some of the error variance. On the other hand, social class differences were found for some interaction measures. Partialling these differences was important not only for reducing error variance, but most importantly, for identifying interaction differences related to intellectual growth that might be independent of social class to the greatest extent possible. This data reduction approach resulted in a set of interaction measures that were predictive of intellectual development for each sample, and some which were common across samples. This procedure was different from that used in the earlier study with the U.S. sample where demographic factors were not controlled in the data reduction process. This preliminary step resulted in 16 interaction measures, some of which were collapsed into five composites, leaving eleven measures for a factor analysis with the total sample (see table 1). The composites were developed for conceptual reasons and had reflected significant inter-item correlations as noted before.*

*A principal components factor analysis method was employed to examine potential similarities in factor structure across culture. It was hypothesized since the two (ethnocultural) samples were comparable in terms of achievement and gender distributions, a two factor solution might emerge. School performance was used as a proxy for intellectual development, along with performance on the categorization and block tasks to explore interaction relationships with intellectual performance. The final step explored the relation between factor scores, with both*

The interaction measures that were most predictive of task and school performance in each of the two samples were identified through multiple regression after controlling for gender and social class. An exploratory principal components factor analysis was then employed to uncover the underlying structure of those selected interaction measures. Those measures were selected based on their relation with intellectual performance in each of the two samples as noted earlier. A two-factor solution emerged from an oblimin rotation, using Cattell's (1966) Scree-test and other relevant criteria with respect to simplicity of structure, interpretableness, and communalities. The two factors accounted for 57.5% of the variance.

The first factor accounted for 40.5% of the variance with an Eigenvalue of 4.4 . The interaction measure that loaded most highly was the maternal positive reinforcement composite (.90) which included elaborations through general comments. Child agreement with mother (.82), and feedback from the mother (.80) were the next highest loading measures. The mother's use of closed question and physical cues in combination with verbal ones (.79) formed part of this style of interaction. The composite of child asks mother questions with child interruptions (.73) was the second measure that was related to the child's participation in the Problem solving activity. This was followed by open questions and verbal cues (.72) by mothers. Finally, the mother's regulation of relational and categorical responses (.61) and regulation through physical cues (.41) were also important to this interaction pattern. Overall, the first factor reflects a participatory

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*performance and control measures.*

style of interaction where the mother is responsive and proactive while the child also appears to be actively involved. The child is both agreeable and active through interruptions and questions. The mother not only reinforces, but elaborates, and demands certain performance standards by feedback which is often in the form of disagreement with the child's response. This pattern of interaction was labeled " Joint Task-focused Participation".

The second factor resulted in and additional 17% of the variance being accounted for, and had an Eigenvalue of 1.8. The factor loaded mainly on experimenter cues (-.80) not being required and humor (.69). Requests for clarification from the experimenter by the dyad also reflected agency, particularly from the mother. The child also interrupts and asks questions (.43) yet there is less direct assistance on the part of the mother, except for some reinforcement (.32). This factor reflects a less didactic style than the first, and centers on the role of the experimenter. Experimenter cues were not generally solicited and were provided when the dyad experienced great difficulty in completing the task. Dyad's who had high scores on this factor rarely required experimenter cues (-.80), yet asked for clarification proactively, ensuring they were on the right track. This pattern appears to reflect the participants' response to external demands in general, with clarification of instructions (.50) leading to success, which then permits the emergence of humor (.69). The child also felt free to interrupt and ask questions frequently (.42). This factor was named (Distanced Regulation). The two factors were not correlated (r= -.01).

In the next step, the relation of these two factors to performance variables and culture were examined. Factor scores were derived for each of the 64 parent-child dyads. These scores reflect a dyad's style of interaction along two continua characterized by the two factor patterns.

The first style of interaction (Factor 1) was associated with intellectual performance in both, school and tasks (see table 3). It was not significantly correlated with social class although a marginal effect was evident for ethnoculture. In contrast, the second factor proved to capture a significant cultural difference (-.72), and was also associated with school performance. It did not correlate significantly with social class, Block Design totals or the total of assisted categorical responses achieved in the eight tasks presented. Gender differences were not predicted nor found for either factor.

In order to gain a deeper understanding of these data, the above correlations were recomputed for each sample separately. A much clearer picture emerged. For the Peruvian sample, the two factors were negatively correlated ® = -.48, $p < .01$)) and only the second factor was associated with school performance ® = .58, $p < .01$). For the U. S. sample, the two factors were positively correlated ® = .42, $p < .05$). The first factor correlated most significantly with block design ® = .49, $p < .01$) and categorization ® = .73, $p < .01$) task performance, and school achievement ® = .39, $p < .05$). The second factor correlated significantly with school performance ® = .57, p , .01), and performance on the Block Design ® = .37, $p < .05$) and categorization ® = .39, $p < .05$).

The first factor, Joint Task-focused Participation, did not reflect cultural differences. However, the second factor was strongly associated with ethnoculture (. 72, $p < .01$), with higher scores being more characteristic of the U.S. sample. Neither factor was associated with gender nor SES within samples, as was the case for the whole sample.

**Discussion**

The present study explored how parents approach teaching their children across two cultures. Parent-child interaction styles were assessed and found to be related to children's cognitive performance, but in ways that depend on ethnocultural context. This finding suggests different avenues for cognitive socialization exist, particularly in the area of formal concepts. However, numerous problems exist and are illustrated in conducting this type of research where cultural context becomes the independent variable.

The findings suggest that interaction patterns related to a specific set of task constraints vary depending on ethnocultural context, even when literacy, SES and gender are controlled. The unsuccessful replication of a mother-child interaction factor that predicted cognitive performance in the U.S. with the Peruvian sample suggests that what may be regarded as effective cognitive socialization practices in one context is not effective in another insofar cognitive performance is concerned.

In the second part of the study, after controlling for the moderating effects of SES and gender on the interaction measures selected for analysis, two main findings appear relevant. The first factor, which was not related to ethnoculture, was predictive of successful cognitive performance in the U.S. sample only. The second factor, which was strongly associated with ethnoculture, was found to be related with the performance of Peruvians only. The two patterns of interaction were found to be modestly related to cognitive performance in general. Hence, the universality of a (culture-free) pattern of cognitive assistance in the development of concepts could not be found with the combined samples. Otherwise, at least one of the two factors would

have had to have been related to intellectual performance in both groups and not have been associated with ethnoculture. The second factor reflected strong cultural differences and was predictive of school performance for both Peruvians and U.S. students, and of task performance but only for the U.S. group. Neither of the factors predicted task performance for the Peruvian sample.

The other main finding is more subtle and concerns the puzzling relationships among the two patterns of interaction indexed by the above factors and performance measures. With the combined samples, the two factors were unrelated. However, they were significantly correlated in each subsample but in the opposite direction. With Peruvian dyads, those who interacted in ways characterized by the first task-focused pattern tended not to engage in the second pattern of interaction. In the U.S. sample, those who engaged in the first pattern of interaction might be observed engaging in the second. Given the dearth of research in this area, these findings beg for theoretical as well as methodological elaboration. Overall, these tentative findings illustrate the complexities and problems inherent research across cultural contexts.

Theoretical Implications

The factors appears relevant to constructs concerning the representational competence found in the distancing paradigm (Sigel, Stinson and Flaugher, 1991), and current research in "scaffolding". The two interaction patterns may involve strategies such as chunking, attention focusing, or attribution (McCarthy, 1991), that are most relevant to the development of metacognition. From the study's theoretical framework, various means of assistance (Tharp &

Gallimore, 1988) such as questioning, contingency management, feedback and cognitive restructuring appear to be distributed differently across both, achievement levels and culture. The first interaction pattern was modestly associated with intellectual performance, but mostly in the U.S. culture. In both ethnocultures, the task-distanced pattern of interaction (Factor 2) was important, but not necessarily in the same way. Only the latter was predictive for Peruvians' performance in school. This suggests that the same pattern of assistance or distancing may have different consequences depending on how children's minds are socialized initially and how grades are earned in school. Hence, we cannot assume that behind a given level of intellectual performance, similar interaction affordances are present. Finally, while the interaction patterns found seem less constrained by task demands than cultural differences, these data cannot rule out task-related universals totally. Other tasks, stages of children's development and contexts might qualify the present findings.

Limitations

The population "validity" (Laosa, 1981) of these findings remains undetermined. The methodological decisions appear critical in the conclusions drawn from the present study. For example, the decision to select interaction measures related to intellectual performance a priori, which were not necessarily an attribute of SES, led to factors that might not have been otherwise uncovered. The absence of a pattern that could predict Peruvians' task performance suggests that other factors might require attention, such as task difficulty, which has been shown to alter the form of interaction (Portes & Zady, 1997). The method employed was designed to focus on the

attributes of intellectual performance status for maximum control in exploring task related regularities. It may be regarded as a dyadic bidirectional model (Sigel & Parke, 1987). However, the extent to which the observed child behaviors are influenced by third parties, in a dialogical sense (Wertsch, 1991) remains undetermined. The role of the child in influencing the interaction and her own intellectual level of development remains partly unmeasured.

Other observations over time and including both parents (when applicable) are needed to examine the above issues as well as improvements to advance the methodologies required for theoretical advancement. It is likely that attention to assessment procedures and new units of analyses may be warranted for theoretical progress as well. In the present study, the findings may be interpreted in the context of the variables defining an "activity setting" as a unit of analysis (Weisner, Gallimore and Jordan, 1992) that serve to "unpackage" or disaggregate cultural variables such as gender, ethnicity, or social class. This unpackaging remains incomplete and will require a blend of both quantitative and qualitative methodologies that are theory driven and descriptive of children's development in relevant settings. Methodological implications may be found here for advancing cultural-historical research on teaching interactions beyond case studies and ethnographies in the future.

Different contexts, tasks, subjects and more comprehensive measures of mental development for both child and parent are needed in future research. Most of all, longitudinal, teaching-experiment designs are needed in truly developmental work. Yet, in spite of the above

limitations, the conclusions of this prospective study center mostly on plausible interpretations (Bruner, 1990) about "cultural context - person" interactions.

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Table 1

Interaction Measures & Composites

| | |
|---|---|
| 1. | M initiates task operations/interaction |
| 2. | C asks question |
| 3. | C agrees with M |
| 4. | C interrupts |
| 5. | M asks OPEN-ENDED questions/prompts, cues-Question form |
| 6. | M asks CLOSE-ENDED question (yes/no or for obvious answer) |
| 7. | M/C asks examiner for clarification/instruction |
| 8. | Cues by examiner (beyond instruction/repetition) |
| 9. | Imperative or directive by M (Let's...) |
| 10. | M directs attention verbally, cues, prompts |
| 11. | M directs attention physically (points, manipulates) |
| 12. | M directs attention Physically and verbally |
| 13. | M uses positive reinforcement, praises, encourages, agrees |
| 14. | M interrupts |
| 15. | Uses of humor, makes task fun |
| 16. | Mother regulated child's categorical or relational response |

Table 2

Factor Analyses of Interaction Measures for U.S.A. and Peru Samples

| Test | Factor I Task Focused Co-Participation | Factor II Distanced Regulation |
|---|---|---|
| 1. M Reinforces, general comments, agrees | .86 | .32 |
| 2. Child agrees with Mother | .83 | .09 |
| 3. Mother disagrees, demands other response from child | .80 | -.27 |
| 4. Imperatives, closed questions, physical/verbal cues | .80 | -.22 |
| 5. Child interrupts, asks questions | .73 | .43 |
| 6. Open questions, verbal cues | .61 | -.27 |
| 7. Mother regulates child response on categorical task | .32 | -.05 |
| 8. Mother physical cues | .09 | .02 |
| 9. Experimenter Cues | -.27 | -.80 |
| 10. Humor | -.22 | .69 |
| 11. Mother or child asks for clarification from E | .43 | .50 |

Table 3
Intercorrelations Among Factor Scores, Ethnoculture, SES, Gender and Intellectual Performance Variables

| | Factor I Task Focused co-Participation | | | Factor II Distanced Regulation | | |
|---|---|---|---|---|---|---|
| | USA | Peru | Total | USA | Peru | Total |
| School Achievement | .39* | .02 | .26* | .57** | .40* | .27* |
| Block Design Total | .49** | .16 | .33** | .38* | -.12 | .05 |
| Categorical Responses | .73** | -.08 | .26* | .39* | -.09 | -.13 |
| SES | .25 | .24 | .24 | -.03 | -.07 | .00 |
| Gender | -.15 | .04 | -.07 | -.13 | -.07 | -.02 |
| Ethnoculture | -- | -- | .00 | -- | -- | -.72** |

*<.05 **<.01